



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/619,115

07/14/2003

Michael Powers

MKPA-105US

6849

23122

7590

03/03/2005

EXAMINER

SONG, SARAH U

RATNERPRESTIA

P O BOX 980

VALLEY FORGE, PA 19482-0980

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/619,115

Applicant(s)

POWERS, MICHAEL

Examiner

Sarah Song

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0703,0504.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

1. The prior art documents submitted by the applicant in the Information Disclosure Statement filed on July 14, 2003 and May 18, 2004 have all been considered and made of record (note the attached copy of form PTO-1449).

Drawings

2. This application has been filed with sixteen (16) sheets of drawings, which have been approved by the Examiner.

Claim Objections

3. Claim 24 is objected to because of the following informalities: "the aperture" lacks proper antecedent basis. For purposes of examination, "the" will be interpreted as "an". Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 1, 3 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Zairi et al. (U.S. Patent Application Publication 2003/0108304).**

Art Unit: 2874

6. Regarding claim 1, Zairi et al. discloses an optical component housing 90 comprising a substrate 92 having a substantially planar fiber mount region 94 and an optical component mount region adjacent to the substantially planar fiber mount region. See Figure 7A.
7. Regarding claim 3, Zairi et al. discloses an optical component housing further comprising a metallic mount pad 96 formed over the substantially planar fiber mount region and configured to bond to a metal solder. See Paragraphs [0028], [0030] and [0036].
8. Regarding claim 4 Zairi et al. discloses the housing further comprising a metallized optical fiber 102 coupled to the metallic mount pad 96 by the metal solder 100. See Paragraphs [0028], [0030] and [0036].
9. **Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Ahn et al. (U.S. Patent 5,570,385).**
10. Regarding claim 13, Ahn et al. discloses an optical component comprising:
 - a substrate 10 formed from a semiconductor of a first conductivity type and having an optical component region (defined by width L) and a substantially planar fiber mount region adjacent to the optical component region;
 - an active layer 60b selected from a group consisting of a bulk gain material and a quantum well structure formed on the substrate over the optical component region;
 - a semiconductor layer 60c of a second conductivity type different from the substrate, the semiconductor layer formed over the active layer 60b;
 - an electrode layer 70 of a high conductivity material formed over the semiconductor layer; and

- an optical output coupler (end facet of laser) formed on a surface of the active layer to provide radiation emitted from the active layer. See Figures 6i and 7e.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. **Claims 2, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zairi et al.**

13. Regarding claim 2, Zairi et al. does not expressly disclose a substrate 92 to be selected from a group consisting of an aluminum oxide ceramic, a nickel-cobalt alloy, aluminum nitride ceramic, or silicon carbide ceramic. However, Zairi et al. discloses that the substrate may be selected from any suitable material. Aluminum oxide ceramics are well known in the art for optical device substrates and for being easily machined. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an aluminum oxide ceramic substrate in order to provide ease of manufacture.

14. Regarding claims 5 and 6, Zairi et al. does not expressly disclose the fiber mount pad to be configured to bond to a glass solder. Zairi et al. does disclose that the fiber 102 may be bare, but also does not expressly disclose coupling the fiber to the fiber mount pad by a glass solder. Glass solders are well known in the art as relatively low temperature solders. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a glass solder to bond the fiber to the mount pad in order to provide ease of manufacture.

Art Unit: 2874

Resultantly, it would additionally have been obvious to one having ordinary skill in the art at the time the invention was made to provide a fiber mount pad that is configured to bond to a glass solder in order to provide proper adhesion between the substrate and the glass solder.

15. Claims 7-12, 18-20 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zairi et al. in view of Tombling et al. (U.S. Patent 6,728,450).

16. Regarding claims 7 and 8, Zairi et al. discloses an optical component housing comprising a substrate 92, and a substantially planar fiber mount region 94 formed on the substrate and adjacent to an optical component mount region, but does not expressly disclose an optical component mount aperture and an optical component placed within an area defined by the aperture.

17. Tombling et al. discloses an optical component mount aperture 52 in an optical device substrate for providing ease of alignment. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an optical component mount aperture, and the optical component 95 of Zairi et al. placed within an area defined by the aperture in order to provide ease and accuracy of alignment. See Paragraph spanning columns 5 and 6.

18. Regarding claims 9 and 10, Zairi et al. discloses an optical component housing further comprising a metallic mount pad 96 formed over the substantially planar fiber mount region and configured to bond to a metal solder. Zairi et al. discloses the housing further comprising a metallized optical fiber 102 coupled to the metallic mount pad 96 by the metal solder 100. See Paragraphs [0028], [0030] and [0036].

Art Unit: 2874

19. Regarding claims 11 and 12, Zairi et al. does not expressly disclose the fiber mount pad to be configured to bond to a glass solder. Zairi et al. does disclose that the fiber 102 may be bare, but also does not expressly disclose coupling the fiber to the fiber mount pad by a glass solder. Glass solders are well known in the art as relatively low temperature solders. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a glass solder to bond the fiber to the mount pad in order to provide ease of manufacture. Resultantly, it would additionally have been obvious to one having ordinary skill in the art at the time the invention was made to provide a fiber mount pad that is configured to bond to a glass solder in order to provide proper adhesion between the substrate and the glass solder.

20. Regarding claims 18-20, the method limitations would also have been obvious for the above reasons as providing requisite steps for the device as discussed above.

21. Regarding claim 24, Zairi et al. discloses a high thermal conductivity base 92, a low thermal conductivity substrate 94 having a substantially planar fiber mount region therein and abutting the high thermal conductivity base with a surface at the same level as the base; and an unpackaged optical component 95 mounted on the base.

22. Zairi et al. does not expressly disclose the optical component having a top surface metallized to serve as an electrode, and an aperture.

23. Tombling et al. discloses an unpackaged optical component having a top surface metallized to serve as an electrode 51, and an aperture in which to mount the component. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a metallized top surface of the device 95 of Zairi et al. and an

Art Unit: 2874

aperture adjacent the device, in order to accommodate the electrodes of the device and to provide ease and accuracy of alignment as taught by Tombling et al. See Paragraph spanning columns 5 and 6.

24. Regarding claim 25, Zairi et al. discloses an optical component housing further comprising a metallic mount pad 96 formed over the substantially planar fiber mount region and configured to bond to a metal solder. Zairi et al. discloses the housing further comprising a metallized optical fiber 102 coupled to the metallic mount pad 96 by the metal solder 100. See Paragraphs [0028], [0030] and [0036].

25. Regarding claim 26, Zairi et al. does not expressly disclose the fiber mount pad to be configured to bond to a glass solder. Zairi et al. does disclose that the fiber 102 may be bare, but also does not expressly disclose coupling the fiber to the fiber mount pad by a glass solder.

Glass solders are well known in the art as relatively low temperature solders. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a glass solder to bond the fiber to the mount pad in order to provide ease of manufacture. Resultantly, it would additionally have been obvious to one having ordinary skill in the art at the time the invention was made to provide a fiber mount pad that is configured to bond to a glass solder in order to provide proper adhesion between the substrate and the glass solder.

26. **Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. as applied to claim 13 above, and further in view of Zairi et al.**

27. Regarding claims 14-17, Ahn et al. does not expressly a mount pad over the planar fiber mount region, a metal solder, or a glass solder.

Art Unit: 2874

28. Zairi et al. discloses an optical component housing further comprising a metallic mount pad 96 formed over the substantially planar fiber mount region and configured to bond to a metal solder. Zairi et al. discloses the housing further comprising a metallized optical fiber 102 coupled to the metallic mount pad 96 by the metal solder 100. See Paragraphs [0028], [0030] and [0036]. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the mount pad and metal solder as disclosed by Zairi et al. in order to provide a rugged assembly with an optical fiber.

29. Furthermore, Zairi et al. discloses that the fiber 102 may be bare, but also does not expressly disclose coupling the fiber to the fiber mount pad by a glass solder. Glass solders are well known in the art as relatively low temperature solders. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a glass solder to bond the fiber to the mount pad in order to provide ease of manufacture. Resultantly, it would additionally have been obvious to one having ordinary skill in the art at the time the invention was made to provide a fiber mount pad that is configured to bond to a glass solder in order to provide proper adhesion between the substrate and the glass solder.

30. **Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. in view of Doussiere et al. (U.S. patent 5,717,711).**

31. Regarding claim 21, Ahn et al. discloses a method of forming a fiber-coupled optical component comprising the steps of:

- forming a substrate 10 from a III/V semiconductor material of a first conductivity type;

Art Unit: 2874

- forming an active layer 60b selected from a group consisting of a bulk gain material and a quantum well structure, the active layer being formed over a portion of the substrate;
- forming a semiconductor layer 60c over the active layer from a III/V material of a second conductivity type different from the substrate;
- forming an electrode layer 70 over the semiconductor layer from a high conductivity material; and
- forming a substantially planar fiber mount region on a surface of the substrate and adjacent to an optical output coupler.

See Figures 6i and 7e.

32. Ahn et al. does not expressly disclose an anti-reflective optical output coupler on a face of the active layer.

33. Doussiere et al. discloses a fiber-laser coupler wherein a substantially anti-reflective optical output coupler is formed on a face F1 of the active layer. See column 3, lines 14-15.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form a substantially anti-reflective optical output coupler on a face of the active layer of Ahn et al. in order to promote emissions from the desired facet of the semiconductor laser.

34. **Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. in view of Doussiere et al. as applied to claim 21 above, and further in view of Zairi et al.**

Art Unit: 2874

35. Regarding claims 22 and 23, Ahn et al. does not expressly disclose the steps of forming a metallic or fiber mount pad over the planar fiber mount region and securing a metallized or bare fiber to the metallic or fiber mount pad by a metal solder or a glass solder.

36. Zairi et al. discloses the steps of forming a metallic mount pad 96 over the substantially planar fiber mount region. Zairi et al. further discloses securing a metallized optical fiber 102 to the metallic mount pad 96 by the metal solder 100. See Paragraphs [0028], [0030] and [0036].

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the metallic mount pad and secure a metallized fiber by a metal solder as disclosed by Zairi et al. in order to provide a rugged assembly with an optical fiber.

37. Furthermore, Zairi et al. discloses that the fiber 102 may be bare, but also does not expressly disclose the step of securing the fiber to the fiber mount pad by a glass solder. Glass solders are well known in the art as relatively low temperature solders. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to secure a fiber by a glass solder in order to provide ease of manufacture for a fiber-coupled device.

Resultantly, it would additionally have been obvious to one having ordinary skill in the art at the time the invention was made to provide a fiber mount pad that is configured to bond to a glass solder in order to provide proper adhesion between the glass solder and the substrate.

Conclusion

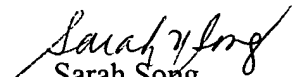
38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,758,610 is related to U.S. Patent Application Publication 2003/0108304 relied upon above.

Art Unit: 2874

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Song whose telephone number is 571-272-2359. The examiner can normally be reached on M-Th 7:30am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sarah Song
Patent Examiner
Group Art Unit 2874